Luis Obispo. One other station, Sierra Madre, Los Angeles County, recorded over 5 inches of rain in 24 hours; there were 10 stations that reported more than 4 inches in 24 hours, and 31 stations with over 3 inches in 24 hours. The greatest monthly precipitation was 15.60 inches at Laurel, and no rain occurred at Mammoth Tank

SUNSHINE.

The following table gives the total hours of sunshine and percentages of possible:

Stations.	Hours.	Per cent of possible.	Stations.	Hours.	Per cent of possible.
Eureka	184	50	San Diego	208	56
Fresno	212	57	San Francisco	177	48
Los Angeles	164	44	San Jose	195	53
Mount Tamalpais	215	58	San Luis Obispo	129	35
Red Bluff	246	66	Alturas	.....	70
Sacramento	221	60	Santa Cruz	.....	80

EARTHQUAKES.

The following reports have been received: Chester, two shocks on the 3d at 11 a. m. and 2.30 p. m.; Point Loma, light shocks on the 5th, 6th, and 7th; Campbell, light shock on the 11th; Hollister, heavy shock at 1.30 p. m. on the 11th, plastering cracked and articles thrown from the walls in several houses; Los Gatos, light shock 1.30 p. m. on the 11th; Claremont, light shock on the 19th at 6.03 p. m.; San Miguel, severe shock at 2.55 p. m. on the 22d.

Capt. W. G. Waters states that the Ranch House, which is strongly constructed to withstand the severe winds that blow on the island, was rocked violently and windows and dishes rattled loudly.

The following reports have been received from the seismological station at Santa Clara College, under the direction of Rev. J. S. Ricard, S. J.: March 6, 5.05.06 to 5.08.06 p. m.; origin 307 kilometers northwest by west. March 10, 3.56.20 to 3.57.42 a. m.; period 1 second disturbance southeast by south. March 11, 1.29.28 to 1.34 p. m.; origin 118 kilometers southeast by east; light shock felt. March 28, 8.13.11 to 8.16.28 p. m.; origin 394 kilometers east 30° 58′ north. March 31, 6.15.35 to 6.18 p. m.; origin 169 kilometers north 26°, 34° west, preceded by small records and followed by minor tremors till 8.26 p. m. This makes a total of 41 earthquakes recorded at Santa Clara by these instruments since their installation, June 9, 1910.

NOTES ON THE RIVERS OF THE SACRAMENTO AND SAN JOAQUIN WATERSHEDS DURING MARCH, 1911.

By N. R. TAYLOR, Local Forecaster.

The Sacramento watershed.—The rains that fell almost continuously during the first decade of the month resulted in dangerously high stages in the Sacramento River above the mouth of the American and freshets in many of the smaller streams.

The Sacramento River at Kennett, Red Bluff, and Monroeville rose 9.8, 11.7, and 10 feet, respectively, during the 24 hours ending at 7 a. m. on the 7th. On this date the flood stage was reached at Monroeville and a large acreage of land in the vicinity of Monroeville, St. John, and Hamilton was flooded. The crest of this rise reached Colusa on the 9th, Knights Landing on the 11th, and Sacramento City on the 13th.

All levees on the west side of the Sacramento River remained intact during the period of high water, but on the 12th a break occurred on the east side about 4 miles above Colusa and resulted in the flooding of several thousand acres of land and the drowning of a large number of spring lambs. The warnings issued by the Weather Bureau resulted in the saving of all stock that could be driven to higher land.

The greatest damage along the Sacramento River, however, resulted from the heavy run-off of the creeks of the western foothills which filled that part of the Colusa Basin known as the "Trough." The trough water, which was the highest ever before known, broke many of the back levees and flooded from ten to fifteen thousand acres of land already planted to grain.

At the close of the month the back levee which protects Reclamation District No. 108 from the foothill water of the west was rapidly weakening.[1]

Below Colusa there was little or no damage from high water, although conditions were menacing between Knights Landing and Sacramento City from the 10th to 13th.

Practically no rain fell in this watershed after the 10th of the month, but the run-off of all streams continued much above the normal as a result of the snow water from the Sierras.

San Joaquin watershed.—General and heavy rains also fell throughout this watershed from the 1st to the 10th, inclusive, causing damaging floods on the San Joaquin River between Stockton and Lathrop, and along Mormon Slough between Stockton and Bellota. Practically all lands that were flooded during January and February were again under water between the 7th and 13th. The rivers of this watershed, like those of the Sacramento, continued relatively high during the entire month, and the increased run-off from snow water was especially noticeable during the last decade of the month.

Judging from the unusually large amount of snow remaining in the mountains it is safe to predict that the run-off of all streams during the coming summer will be the greatest since that of 1907.

SNOWFALL IN THE MOUNTAINS.

March was a month of moderate snowfall in the mountains of California. By the end of the first decade the snow cover was deeper and more extensive than had been known for many years. The heavy snowfall of January, the moderate fall of February, and the heavy fall of the first 10 days in March resulted in the condition mentioned above. Then followed, however, a period of prolonged fair weather and there was a steady decrease in depth and area. At the close of the month the depth did not in general exceed that of the season of 1904, and was less than at the same period in 1906, 1907, and 1909. It was, however, far in excess of the depths recorded at the close of March, 1905, 1908, and 1910.

It is still too early to forecast the probable duration of the snow; but there is every likelihood that the supply of water will be sufficient for all needs and that there will be snow at the higher elevations until late in the summer. Regarding travel in the mountains, the season will probably be a late one and certain of the higher passes will not be open for travel until the middle of July. There is an abundance of water for irrigation, mining, and other purposes.

[1] This levee gave way on April 5, flooding 25,000 acres of land, all of which was planted to crops which were totally destroyed. The damage is estimated to be $400,000.